Crestron **WPR-48**
Waterproof Wireless Handheld Remote
Operations Guide

CRESTRON.

WARNING: The WPR-48 Waterproof Wireless Handheld Remote has been tested and found to be waterproof when submerged to a maximum depth of 1 meter, and for a maximum duration of 30 minutes, per IEC 60529 IPX7 standards. Exceeding these limits may result in damage to the equipment, possible personal injury, and void the product warranty.

WARNING: The WPR-48 is shipped from the factory partially assembled. That is, the eight screws that secure the rear cover to the button faceplate are not fully tightened, to simplify the process of installing button labels, as described in this Operations Guide. As such, the unit is not waterproof; exposing it to water may result in damage to the equipment, possible personal injury, and void the product warranty.

WARNING: After installing button labels, as described in this Operations Guide, tighten all eight screws that secure the rear cover to the button faceplate evenly just until the gasket is no longer visible between the button faceplate and the rear cover (from 1.5 to 2 in/lbs torque, maximum). **Do not overtighten the screws. To do so may damage the gasket such that the unit is no longer waterproof.** Exposing such a unit to water may result in damage to the equipment, possible personal injury, and void the product warranty.

WARNING: The lanyard, supplied with the lanyard foot, poses a possible strangulation hazard. Crestron does not recommend placing the lanyard around the neck as a means of carrying the WPR-48. Do not leave the lanyard, or the WPR-48 with lanyard foot and lanyard attached, unattended in any area where children or pets may be present.

WARNING: This product contains small parts and is not intended for children. This product is intended for adult use only.

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Waterproof Wireless Handheld Remote: WPR-48

Introduction

Features and Functions

The Crestron® WPR-48 waterproof wireless handheld remote can be configured to transmit either RF or IR signals, making it perfect for controlling music, television, lighting and more. The unit is also available in an international version, the WPRI-48. The unit is safe to use in the shower or hot tub. The rubberized, immersible case is easy to grip, and will not slip from moist hands.

A streamlined user interface of multi-function pushbuttons makes the WPR-48 simple to use under a variety of conditions. The nine three-position pushbuttons may be configured in any of four arrangements, providing 9, 18, 27, or 48 possible functions.

Large customizable labels with electroluminescent backlighting facilitate use under any lighting conditions.

The WPR-48 can communicate via RF or IR with a number of gateways in a Crestron control system (Cresnet® system). Since it is compatible with Crestron's CNRFGWA and CNRFGWA-418 RF gateways; as well as the MC2W and ST-CP control systems with a built-in RFGWA gateways, the CNXRMIRD IR receiver, and the CN-TVAV device controller, the WPR-48 fits easily into any Crestron control system design.

Functional Summary

- Nine pushbuttons provide up to three functions per button.
- Configuration settings allow up to 48 possible functions.
- Large customizable labels with electroluminescent backlighting identify the button functions.
- Long-life lithium-ion rechargeable battery provides several weeks of wireless use on a single charge.

The built-in, long-life lithium-ion rechargeable battery provides several weeks of wireless use on a single charge. It is easily recharged when the remote is placed in the WPR-DS docking station (included).

Specifications

The following table provides a summary of specifications for the WPR-48.

Specifications of the WPR-48

SPECIFICATION	DETAILS
Power Requirements	3.6 VDC Lithium-Ion battery, 750 mAh
	Usage per charge: up to 5 hours (backlight On continuous); up to 4 weeks (typical home use)
	Charging time: 1.5 hours (maximum)
Wireless Specifications	
RF Transmitter	433 MHz or 418 MHz 1-way RF[1]
RF Bandwidth	±100 kHz
RF Range	Up to 300 feet (typical)
IR Transmitter formats[2]	38 kHz RC5 455 kHz Crestron format
IR Range	Up to 15 feet (typical)
Control System Update Files [3, 4, 5]	
2-Series Control System	
CEN/CN-TVAV	All Versions
CNMSX-AV/PRO	
CNRACKX/-DP	
ST-CP	
Default RF ID; IR ID	10
Operating Temperature	32° to 140°F (0° to 60°C)
Humidity	0% to 100% RH (non-condensing)
Dimensions	Height: 5.26.in (13.36 cm)
	Width: 2.79 in (7.09 cm)
	Depth: 1.16 in (2.95 cm) using standard lanyard foot
	0.82 in (2.08 cm) using blank foot
Weight	4.8 oz (134.4 g)

1. Requires Crestron CNRFGWA, CNRFGWA-418, or the MC2W or ST-CP control systems with built-in RFGWA gateways.
2. Requires Crestron CNXRMIRD IR Receiver, or CN-TVAV device controller.
3. The latest versions can be obtained from the Downloads | Software Updates section of the Crestron website (www.crestron.com). Refer to NOTE after last footnote.
4. Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.
5. CNX update files are required for either CNMSX-AV/PRO or CNRACKX/-DP. Filenames for CNX update files have a UPZ extension and ST-CP files are in one EXE or zipped UPZ file. To avoid program problems, make certain you are using the update file with the correct suffix letter (e.g., S, V, W, X).

NOTE: Crestron software and any files on the website are for Authorized Crestron dealers only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

WARNING: The WPR-48 is shipped from the factory partially assembled. That is, the eight screws that secure the rear cover to the button faceplate are not fully tightened to simplify the process of installing button labels, as described in "Installing/Replacing Button Labels" on page 12. As such, the unit is not waterproof; exposing it to water may result in damage to the equipment, possible personal injury, and void the product warranty.

Physical Description

The WPR-48 electronic hardware is housed in a slim, rubberized plastic, waterproof enclosure, with two clear windows for large customized labels that identify the intended button functions. (Refer to the illustration on the next page.) Electroluminescent backlighting enhances the labeling and makes it possible to read the button functions even in the dark.

WARNING: The WPR-48 Wireless Handheld Remote has been tested and found to be waterproof when submerged to a maximum depth of 1 meter, for a maximum duration of 30 minutes, per IEC 60529 IPX7 standards. Exceeding these limits may result in damage to the equipment, possible personal injury, and void the product warranty.

The unit is shipped with the lanyard foot installed. The lanyard foot puts the unit at a convenient angle when the unit is placed on a flat surface; the lanyard makes it easy to carry the unit around the home. A blank foot is supplied for those installations in which the unit is usually left in one location.

Refer to "User-Printable Customized Button Labels" on page 10 for details about creating button labels.

WPR-48 Waterproof Wireless Handheld Remote with Lanyard and Customized Button Labels, Mounted in Docking Station

WPR-48 Physical Views.

TOP

1.16 in
(2.95 cm)

0.82 in
(2.08 cm)

FRONT   SIDE   BACK

T ○
B ○

○ △
○ ▽

5.26 in
(13.36 cm)

CRESTRON

2.79 in
(7.09 cm)
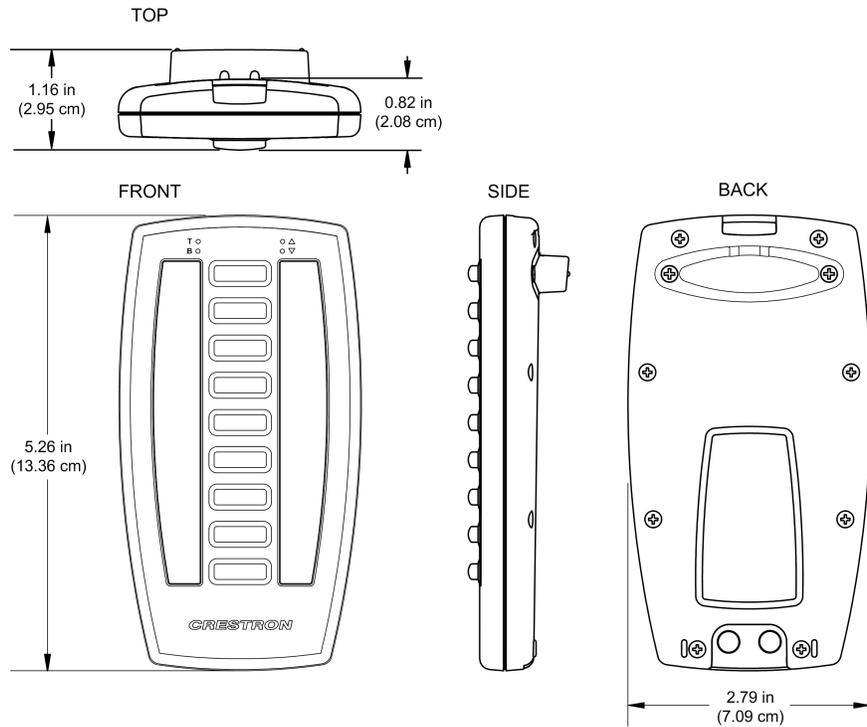
Connectors

The only connectors on the WPR-48 are the two contacts on the back panel. These contacts are used for charging the long-life lithium-ion battery when the unit is placed in the WPR-DS docking station. These contacts are also used when configuring the unit and when firmware is uploaded via the docking station.

NOTE: During configuration and when firmware is being uploaded, the charging circuits in the docking station are automatically disconnected.

Controls

The WPR-48 has nine three-position buttons, which can be configured, using the Crestron Viewport, for 9-, 18-, 27-, or 48-function operation. Actual button functions are defined in the SIMPL Windows program, based on the application of the unit within the Cresnet system.

Indicators

The only indicators on the hand-held WPR-48 are the four LEDs on the face of the unit, above the button function windows. The B LED (red) blinks if the battery charge is low; the T LED (red) illuminates when the WPR-48 is transmitting. The operation of the ▼ LED (red) and the ▲ LED (red) depends on the unit's configuration. In a 48-button configuration, the ▼ LED indicates that the unit is transmitting 'page 1' functions; the ▲ LED indicates that the unit is transmitting 'page 2' functions. In the 9-, 18-, and 27-button configurations, there are no 'page' functions. If the configuration is set up to allow key presses to change the unit's RF or IR ID, these two LEDs illuminate simultaneously during ID reprogramming (refer to "Setting RF/IR ID via Button Presses" on page 9 for details).

Industry Compliance

As of the date of manufacture, this unit has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling (N11785).

$$CE \quad \bullet$$

NOTE: This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. The equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

Setup

Applying Power

Power for the WPR-48 is provided by the built-in, rechargeable 3.6 VDC lithium-ion battery. (The unit is shipped with the battery charged.) The battery is recharged when the WPR-48 is placed in the companion docking station (WPR-DS). Note that the docking station is also used during configuration procedures and when uploading new firmware to the WPR-48. When the docking station is being used for configuration or firmware functions, the recharge circuits are automatically turned off.

Configuring the WPR-48

The WPR-48 can be configured to transmit either RF or IR signals. (By default, the units are shipped as RF devices.) Every WPR-48 transmitter communicating with a Cresnet system via RF requires a unique RF ID to secure RF communications. Similarly, every WPR-48 transmitter communicating with a Cresnet system via IR signals requires a unique IR ID to secure IR communications. The unit's default RF

ID and IR ID settings are 10. The RF/IR ID of the unit and the RF/IR ID specified for it in the SIMPL Windows program must match. There are 256 possible two-digit hexadecimal codes ranging from 00 to FF.

Refer to the note on page 18 for a definition of Viewport.

To configure the WPR-48 through Viewport, the following items are required

- PC running Crestron's Viewport utility, version 3.99.01 or later.

- An RS-232 cable (RJ-11 – DB-9) such as the Crestron STCP-502 (not supplied) to connect the WPR-DS to the serial port of the PC. This connection can also be made with a modular RJ-11 cable and a DB9F to RJ-11 adapter. (Refer to the following illustration.)

STCP-502 PINOUT

Pin 1 →

RJ-11 PINS	SIGNAL	DB9 PINS
1	CTS	7
2	G	5
3	Rx	3
4	Tx	2
5	RTS	8
6		n/c
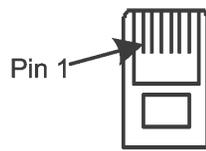
CONNECTOR, 6 PIN, RJ-11 (TAB FACING AWAY)
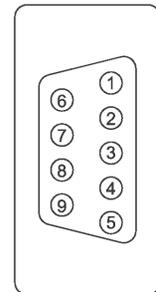
CONNECTOR, DB9, FEMALE (REAR VIEW)

NOTE: Check the SIMPL Windows gateway models prior to setting the RF ID or IR ID. Some gateway models do not support ID "00" or "FF."

NOTE: If the battery in the WPR-48 has become fully discharged, it will require approximately five minutes of recharging before the unit can be reconfigured.

With the WPR-48 inserted in its docking station, complete the following procedures.

1. Verify that communications with the PC are established, as specified in "Communication Settings" on page 18.

2. Open the Crestron Viewport, and from the menu bar, select **Functions | Configure WPR-48** as shown in the following illustration**.**

NOTE: While configuring the WPR-48, do not remove the WPR-48 from the docking station until you have exited the dialog by clicking on **Exit.**

"Function | Configure WPR-48" Window
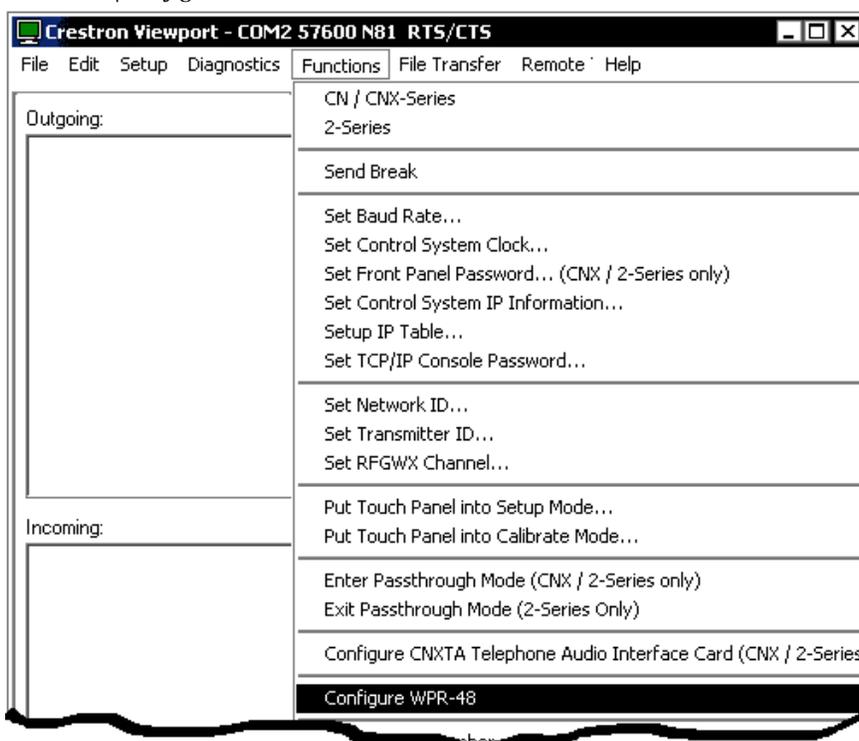
3. The Viewport first displays a "WPR-48 COM Port" window that lets you select the appropriate port. Viewport then displays the "WPR48 Configuration" window, as shown following this step. The configuration window lets you define how the WPR-48 will function. The settings are not transferred to the device until that instruction is given. When the window is first opened, it displays the values currently in the connected device. If there is no device communication, the default configuration values, as shown here, will be displayed. If the values in the device are not one of the four supported configurations (9-, 18- 27-, or 48-buttons), a notice appears on the screen and the default settings are displayed.

"WPR48 Configuration" Window

4. Select one of the "Load . ." buttons to display either the default configuration values, the current values stored in the WPR-48 in the docking station, or the values saved in a file on the PC. When you select the **Load From File** button, the Viewport displays an "Open" window that allows you to browse to find the desired file.

    The default values for the RF configuration are: RF Remote, RF ID 10, 433 MHz, 27 Buttons, 100% Backlight Brightness, 10 second Backlight Timeout, unchecked "Allow key presses. . ."

    If you select **Load From Device** and the device contains disallowed configuration settings, they will be replaced by default values and an error message will be displayed.

5. The *Remote Type* area lets you specify whether the WPR-48 will function as an RF or an IR device, and lets you assign the unit's corresponding RF or IR ID number. (The number(s) must correspond with the numbers set in the SIMPL program.)

6.   Specify the RF or the IR gateway compatibility options that apply to your Cresnet system. For an RF configuration, you can also specify the RF power level as a percentage from 1% to 100%.

7.   As you select the number of buttons that will be used in your configuration, note the limitations stated on the screen.

8.   The *Miscellaneous Settings* area lets you set the relative brightness level of the backlight (from 1% to 100%), set the timeout for the backlight (1-999 seconds), which reduces wear on the battery, or choose to disable the backlight completely.

     You can also choose to allow changing the RF ID or IR ID via button presses. (Refer to "Setting RF/IR ID via Button Presses" below.) This can be useful when first setting up a job. However, Crestron recommends that you disable this option when the WPR-48 will be operated by an end user, to avoid accidental changes to the ID settings.

9.   The *Information from WPR48* area displays the WPR-48 firmware version and the battery's charge level (as a percentage value). This area also displays communications status messages.

10. The three buttons at the bottom of the screen are used to send the screen settings to the device, to save the settings to a file, or to exit the configuration setup operation.

     If you select the **Save To File** button, the saved file can be used to upload directly to the remote via the Viewport **File Transfer | Update WPR-48 Firmware** function. This can be useful if you are preparing files in the office to be sent to an installation site.

NOTE: Do not remove the WPR-48 from the docking station until you have exited the configuration operation. If you do, the backlight timeout function may be disabled, which would result in excessive wear and tear on the battery.

Setting RF/IR ID via Button Presses

If you have checked *Allow key presses to change unit's RF or IR ID* on the "WPR48 Configuration" window, you can use a special button sequence to alter these values without having to connect to a PC. Perform the following steps.

1.   Press and hold both page buttons (press center of bottom button).

2.   While holding the page buttons, press and hold the appropriate button to select the desired operation (Set IR ID or Set RF ID), as shown in the following table. This will cause both page LEDs to illuminate.

3.   While holding the operation button, release the page buttons.

4.   Release the operation button. (The page LEDs remain on until you enter the ID number.)

The following table lists the two ID functions as well as hexadecimal values, shown in brackets [ ], corresponding to the left and right positions of the top eight buttons on the WPR-48

LEFT PRESS VALUE	BUTTON	RIGHT PRESS VALUE
[0]	1	[1]
[2] Set IR ID	2	[3] Set RF ID
[4]	3	[5]
[6]	4	[7]
[8]	5	[9]
[A]	6	[B]
[C]	7	[D]
[E]	8	[F]

To enter the ID number, (two hexadecimal numbers), press the corresponding buttons, such as [6] [B]. The page LEDs then go out indicating that the ID has been set.

User-Printable Customized Button Labels

Use the Crestron Engraver software package, Version 2.2 or later, available from the Downloads | Software Updates section of the Crestron website (www.crestron.com) to design and print unique button labels. (Also requires Crestron Database, version 16.3 or later.)

The help file included with the software package provides detailed instructions for selecting the buttons and entering the legends

To design the button labels for the WPR-48, open the Engraver software package and do the following:

1. When the "Choose Panel Type" window appears, click on the **Create a new Engraver File** button, select **WPR-48** from the drop-down list. Then, in the "Options" area, select white text on a black background or black text on a white background, and click **OK**. The button layout screen appears as shown in the following illustration (shown here with populated fields; white text on a black background).

Crestron Engraver Software Button Legend Entry Screen
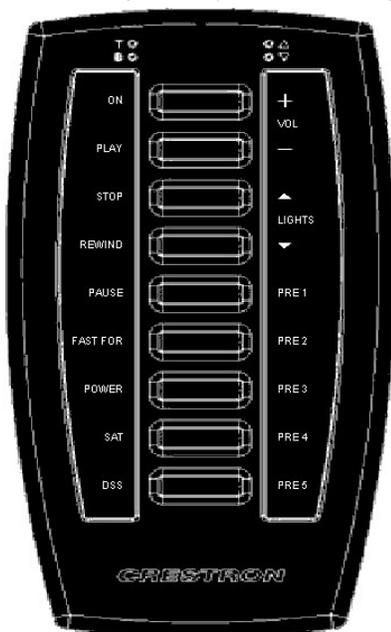
2. Double click the desired entry field (there are two fields on each side of each button location except the bottom button). The "Enter Text Area Label" window appears as shown in the following illustration.
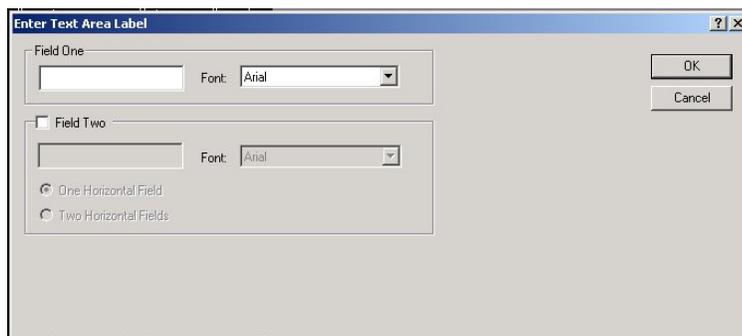
3. The label is tapered at the top and bottom. You can enter from one to six alphanumeric characters in the narrowest fields, and from one to seven, eight, or nine characters in wider fields. An error message appears if you try to enter too many characters.

    You can select any of the three fonts available from the drop-down list—Arial, Crestron Transport, or Crestron Transport Outline—but you cannot mix fonts in a single field. You can, however, use the *Field One* and *Field Two* entry fields, which together form one line of text, to combine two different fonts, for example VOL▲ and VOL▼.

    The Crestron Transport font consists of symbols that represent standard device functions such as Fast Forward, Rewind, Up and Down. Each symbol corresponds to a letter of the alphabet (from A to P, not case-sensitive) as follows:
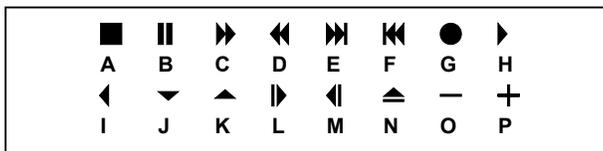
4. Once you have entered all the desired button legends, save the file and print the file. You can use any paper from 20-pound bond to 100-pound card stock. Maximum paper thickness is 0.013 in (0.03 cm). Cut out the labels, cutting just inside the lines that define the label area.

5. To install the labels, refer to the "Installing/Replacing Button Labels" procedure, which follows.

Installing/Replacing Button Labels

To install or replace button labels in the WPR-48, the unit must be disassembled and, after placing the labels in position, carefully reassembled. Perform the following procedures.

1. Using a #1 Phillips screwdriver, remove the eight cover screws securing the rear cover to the button faceplate, and lift the rear cover from the assembly. (Refer to the following illustration.)

CAUTION: Avoid contact with the electronic circuitry attached to the rear cover, to prevent damage to the equipment.

WPR-48 Assembly View
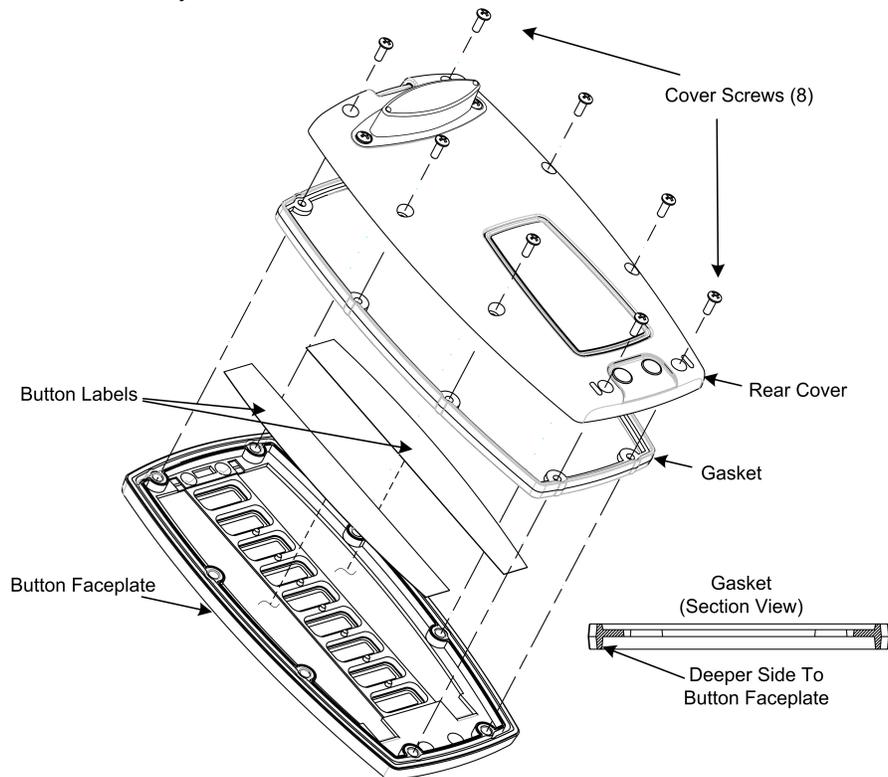
2. During disassembly, the gasket may become separated from the rear cover and the button faceplate. If this occurs, carefully assemble the gasket to the button faceplate with the deeper side down as shown in the preceding graphic.

CAUTION: The reassembly procedure must be done carefully to ensure that the WPR-48 will be waterproof.

3. Place the button labels in position, face down, and carefully assemble the rear cover to the button faceplate, making certain the gasket is properly seated. Use two or three screws to hold the assembly together and turn the unit over to verify that the button labels are properly positioned and can be easily seen. Then add the remaining screws and tighten all eight screws evenly just until the gasket is no longer visible between the button faceplate and the rear cover (from 1.5 to 2 in/lbs, maximum). **Do not overtighten the screws. To do so may damage the gasket such that the unit is no longer waterproof.** Exposing such a unit to water may result in damage to the equipment, possible personal injury, and void the product warranty.

Installing Alternate Foot

To install the alternate blank foot (supplied), refer to the following illustration and perform the associated procedures.
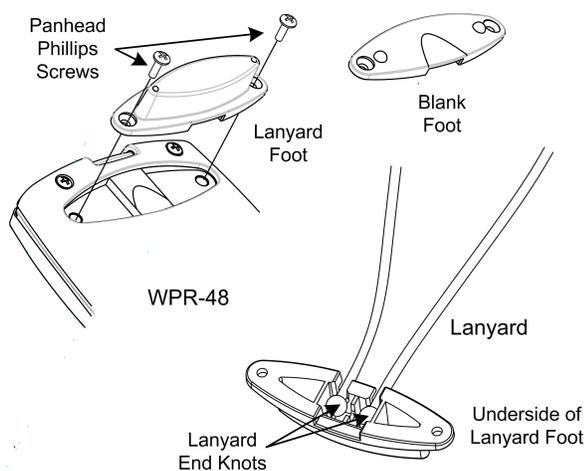
1. Using a #1 Phillips screwdriver, remove the two pan head Phillips screws securing the lanyard foot to the rear cover of the WPR-48, and carefully remove the foot.

2. Retain the lanyard foot (note the placement of the lanyard end knots in the cavity of the lanyard foot) for use at another time.

3. Assemble the blank foot to the rear cover as shown, and secure with the screws removed in Step 1.

WARNING: The lanyard, supplied with the lanyard foot, poses a possible strangulation hazard. Crestron does not recommend placing the lanyard around the neck as a means of carrying the WPR-48. Do not leave the lanyard, or the WPR-48 with lanyard foot and lanyard attached, unattended in any area where children or pets may be present.

WARNING: This product contains small parts and is not intended for children. This product is intended for adult use only.

Programming the WPR-48

Have a question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron website (www.crestron.com). Go to http://support.crestron.com to post your own question or view questions you have submitted to Crestron's True Blue Support. First-time users will need to establish a user account.

Including a WPR-48 into a system requires adding the WPR-48 into a SIMPL Windows program, using the Crestron Viewport to configure the unit for operation, and using the Crestron Engraver to prepare and print button labels.

Earliest Version Software Requirements for the PC

NOTE: Crestron recommends that you use the latest software to take advantage of the most recently released features. The latest software is available from the Downloads | Software Updates section of the Crestron website (www.crestron.com).

The following are the earliest useable software version requirements for the PC:

- SIMPL Windows version 2.05.18 or later with library update file 297 or later. Requires SIMPL+® Cross Compiler version 1.1.

- Crestron Database version 16.2.3 or later. Required by SIMPL Windows and Crestron Engraver.

- Viewport version 3.99.01 or later. For setting up the unit configuration.

- Crestron Engraver version 2.2. Requires Crestron Database version 16.2.3.

Programming with SIMPL Windows

NOTE: The following assumes that the reader has knowledge of SIMPL Windows. If not, refer to the extensive help information provided with the software.

NOTE: In the following description, the PRO2 control system is used.

SIMPL Windows is Crestron's software for programming Crestron control systems. It provides a well-designed graphical environment with a number of workspaces (i.e., windows) in which a programmer can select, configure, program, test, and monitor a Crestron control system. SIMPL Windows offers drag and drop functionality in a familiar Windows® environment.

This section describes a sample SIMPL Windows program that includes a WPR-48

Configuration Manager is where programmers "build" a Crestron control system by selecting hardware from the *Device Library*. In Configuration Manager, drag the PRO2 from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The PRO2 with its associated communication ports is displayed in the *System Views* upper pane.

PRO2 System View
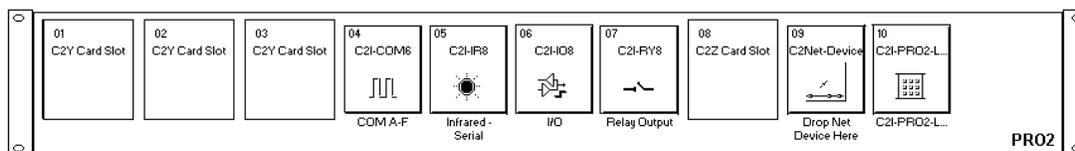
The *System Views* lower pane displays the PRO2 system tree. This tree can be expanded to display and configure the communications ports.

Expanded PRO2 System Tree
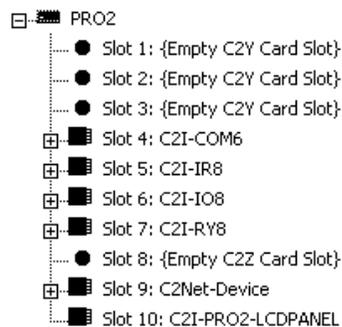
C2Net-Device Slot in Configuration Manager

An RF gateway device is required to incorporate a wireless RF transmitter into a Cresnet system. Once a gateway is configured in a C2Net-Device Slot, the slot allows Cresnet communication between the transmitter and the control system. Similarly, an IR gateway device or receiver is required to incorporate a wireless IR transmitter into a Cresnet system.

To incorporate the RF configuration of the WPR-48 in a SIMPL program, in Configuration Manager, drag the CNRFGWA RF gateway from the Wireless Receivers | Wireless Receivers (RF) folder of the *Device Library*. The *System Views* upper pane displays the CNRFGWA device icon below the PRO2 graphic. The PRO2 system tree displays the CNRFGWA gateway in Slot 9, with a default Net ID of 24.

NOTE: The ST-CP control processor is automatically configured with a CNRFGWA in its STCP-Net Device Slot 3, with a fixed Net ID of 2, when the ST-CP is dragged into the upper pane of *System Views*. This Net ID cannot be changed.

To incorporate the IR configuration of the WPR-48 in a SIMPL program, in Configuration Manager, drag the CNX-RMC or CNX-RMCLV room solution box from the Cresnet Control Modules | Cresnet Video Modules folder of the *Device Library.* The *System Views* upper pane displays the CNX-RMC device icon below the PRO2 graphic. Then drag the CNXRMIRD IR detector from the Wireless Receivers | Wireless Receivers (IR) folder of the *Device Library* and drop it on the CNX-RMC. The PRO2 system tree displays the CNXRMIRD IR detector in Slot 2 of the CNX-RMC.

Double-click the CNRFGWA or the CNX-RMC icon in the lower pane to open the "Device Settings" window, which displays device information. Select the *Net ID* tab to change the gateway Net ID. The window for the CNRFGWA is shown in the following figure.

"Device Settings" Window for the CNRFGWA
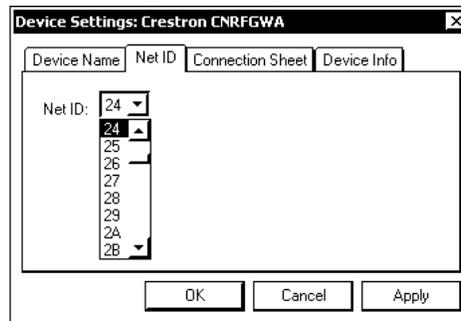
Drag the WPR-48 from the Wireless Remotes | Wireless Remotes (RF) folder of the *Device Library* and drop it on the CNRFGWA symbol in *System Views*. The CNRFGWA displays the WPR-48 at the transmitter's default RF ID location, "10," as shown in the PRO2 system tree illustration. The procedure for the WPR-48 IR configuration is almost the same, except that you drag the WPR-48 (IR) from the Wireless Remotes | Wireless Remotes (IR) folder of the *Device Library* and drop it on the CNXRMIRD symbol in *System Views*. The CNXRMIRD then displays the WPR-48 with the transmitter's default RF/IR ID, "0F."

Pro2 System Tree
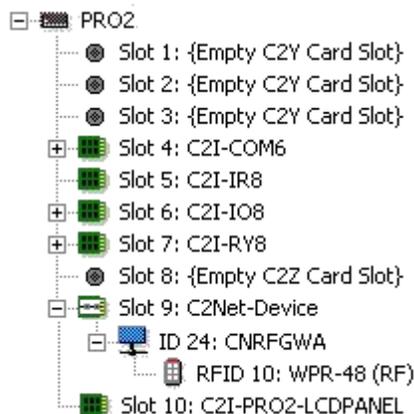
Double-click the WPR-48 icon in the lower pane of the expanded system tree to open the "Device Settings" windows for the transmitter. Select the *RF/IR ID* tab to change the transmitter RF/IR ID, as shown in the following figure.

NOTE: The hardware configuration settings, which were described in "Configuring the WPR-48" on page 5, and the software settings of the RF/IR ID must match.

Transmitter "Device Settings" Window
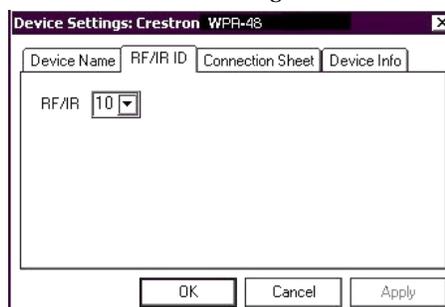
WPR-48 Symbol in Programming Manager

Programming Manager is where programmers "program" a Crestron control system by assigning signals to symbols. The following diagram shows the symbol in the SIMPL Windows' Programming Manager for the WPR-48 (RF). The symbols for both the RF configuration and the IR configuration are functionally identical.

Detail View of the WPR-48 in SIMPL Windows' Programming Manager
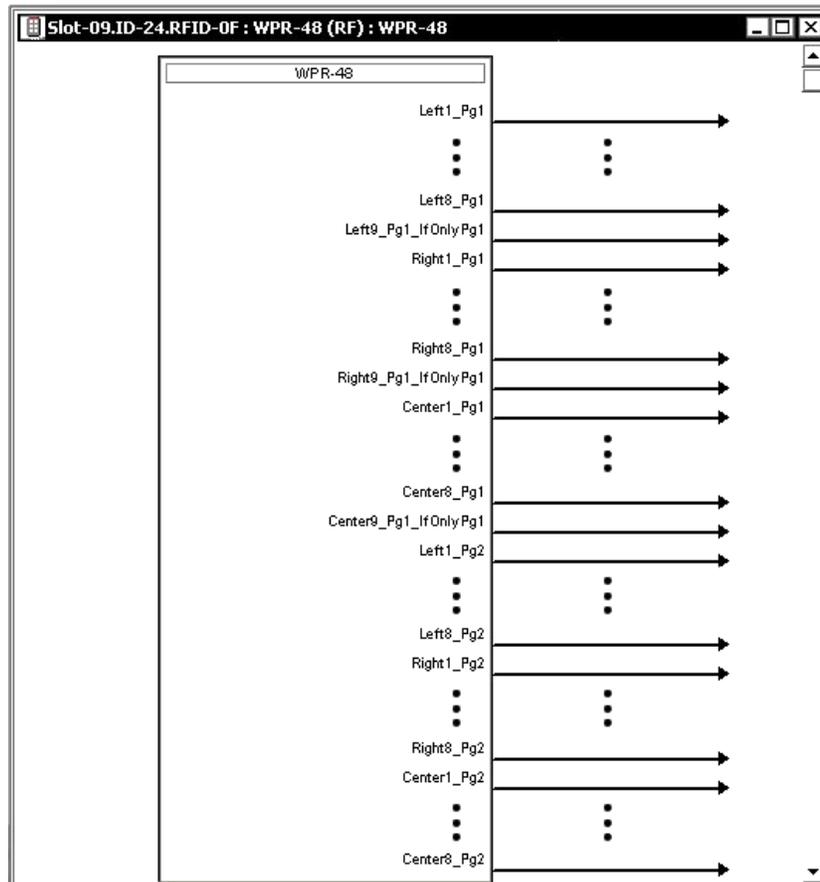
Each digital output signal represents a button press state. If the signal is high/1, the button is being pressed; if low/0, the button is not being pressed.

The WPR-48's nine pushbuttons operate in four different modes. All four modes are configurable using the Crestron Viewport.

48-button mode

In 48-button mode each of the top eight pushbuttons can trigger up to three functions, depending on where it is pressed: the left side, the right side, or the center. The ninth pushbutton acts as a shift key. Pressing the left side of the shift key enables the first "page" of 24 digital commands, while pressing the right side of the shift key enables the second "page" of 24 digital commands, for a total of 48 commands.

In this configuration, the WPR-48 receives presses on the <**_Pg1**> and <**_Pg2**> that correspond to pushbuttons 1 through 8, left, right and center. The digitals corresponding to pushbutton 9 have no effect in 48-button mode, since in this mode pushbutton 9 is the shift key.

27-button mode

In 27-button mode, the pushbuttons can trigger up to three functions depending on where it is pressed. In this configuration the WPR-48 is programmable using the 27 <**_Pg1**> digital presses that correspond to buttons 1 through 9, left, right and center.

18-button mode

In 18-button mode, each of the nine pushbuttons can trigger up to two functions, depending on whether the button is pressed on the left or right side. Pressing the center of the button has no effect in this mode. In this configuration, the WPR-48 is programmable using the 18 <**_Pg1**> digital presses that correspond to buttons 1 through 9, left and right only (no center).

9-button mode

In 9-button mode, each pushbutton can trigger one function. In this configuration, the WPR-48 is programmable using the first nine digital presses on the symbol detail—that is, <**Left1_Pg1**> through <**Left9_Pg1_IfOnlyPg1**>. None of the other digital presses has any effect in this mode.

Uploading and Upgrading

Assuming a PC is properly connected to the entire system, Crestron programming software allows the programmer to upload programs and projects after their development to the system and network devices. However, there are times when the files for the program and projects are compiled and not uploaded. Instead, compiled files may be distributed from programmers to installers, from Crestron to dealers, etc. Even firmware upgrades are available from the Crestron website as new features are developed after product releases. In those instances, one has the option to upload via the programming software or to upload and upgrade via the Crestron Viewport.

NOTE: The Crestron Viewport utility performs multiple system tasks, primarily via an RS-232 or TCP/IP connection between the control system and a PC. It is used to observe system processes, upload new operating systems and firmware, change system and network parameters, and communicate with network device consoles and touchpanels, among many other tasks. Viewport can also function as a terminal emulator for generic file transfer. All of these functions are accessed through the commands and options in the Viewport menus. Therefore, for its effectiveness as a support and diagnostic tool, the Crestron Viewport may be preferred over development tools when uploading programs and projects.

The following sections define how one would upgrade the firmware of the WPR-48. However, before attempting to upgrade, it is necessary to establish communications.

Communication Settings

NOTE: For laptops and other PCs without a built-in RS-232 port, Crestron recommends the use of PCMCIA cards, rather than USB-to-serial adapters. If a USB-to-serial adapter must be used, Crestron has tested the following devices:

> Belkin (large model) F5U103
> I/O Gear GUC232A (discontinued)
> Keyspan USA-19QW (discontinued)

Results may vary, depending on the computer being used. Other models, even from the same manufacturer, may not yield the same results.

The procedure in this section provides details for RS-232 communication between the PC and the WPR-48. Refer to the figure below for a typical connection diagram when upgrading firmware.

NOTE: Use an RS-232 cable (RJ-11 – DB-9) to connect the WPR-DS docking station to the serial port of the PC. This connection can be made with a modular RJ-11 cable and a DB9F to RJ-11 adapter. (Refer to "Configuring the WPR-48" on page 5 for details).

NOTE: The connection to the WPR-48 is through the charging contacts of the WPR-DS. During a firmware upload procedure, the charging circuits are automatically disconnected.

Typical Connection Diagram when Uploading Firmware from the PC
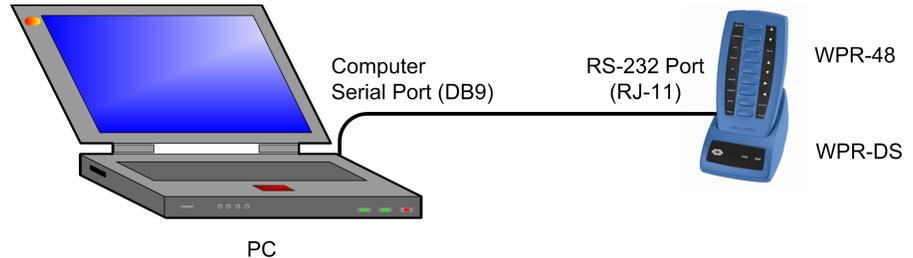
1. Open the Crestron Viewport.
    Either launch the stand-alone version of Viewport, or start SIMPL Windows, and from the menu bar, select **Tools | Viewport.**

2. From the Viewport menu, select **Setup | Communications settings** (alternatively, press **Alt+D**) to open the "Port Settings" window. Refer to the following figures.

Accessing the "Port Settings" Window
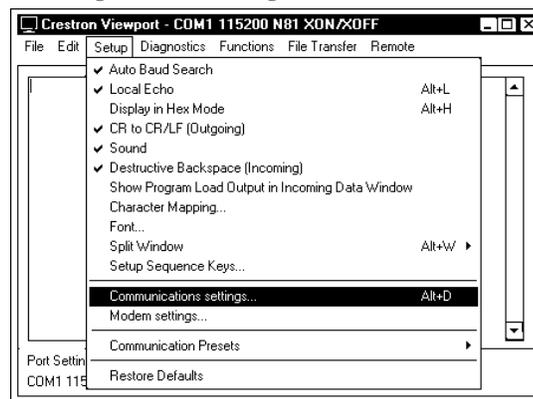
3. Select the **RS-232** connection type. Verify the available COM is selected. Verify that the baud rate is set to **57600**, the parity is **None**, the data bits is **Eight**, the stop bits is **One,** *XON/XOFF* is not selected, and *RTS/CTS* is selected. Click the **OK** button to save the settings and close the window.

"Port Settings" Window

4. Proceed to "Firmware Upgrade" which follows.

Firmware Upgrade

A firmware upgrade file has the extension .upg

Firmware upgrade files can be obtained from the Downloads | Software Updates | Touchpanels section of Crestron's website (www.crestron.com). To upgrade the WPR-48 firmware, complete the following steps.

1. Make sure that "Communication Settings" that begins on page 18 has been performed.

2. Press one of the buttons on the WPR-48 to activate the unit. The backlight should come on.

NOTE: Be aware that pressing a button to activate the unit automatically sends whatever command is associated with that button.

3. From the Viewport, select **File Transfer | Update WPR-48 Firmware.**

4. The "WPR-48 COM Port" window appears to permit selection of the appropriate COM port for the WPR-48. Select the port and click **OK.**

5. As shown in the following illustration, select the desired firmware (.upg) file and click **Open**. The transfer will complete automatically.

Select Firmware File
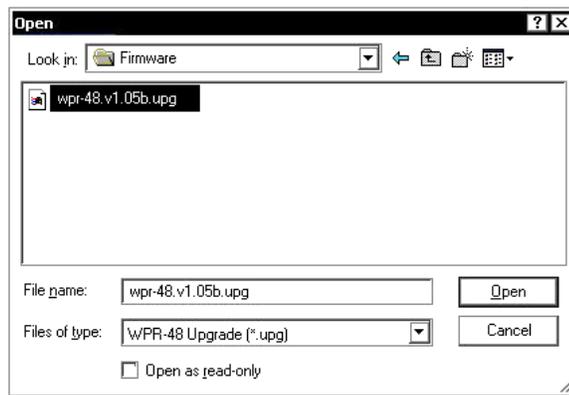
6. If the transfer is successful, the Viewport screen displays a message similar to **CNWPR [v0.3]**. If the transfer is unsuccessful, the screen will again display the bootloader message **CNWPR Bootloader (v8.3).**

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

WPR-48 Troubleshooting

TROUBLE	PROBABLE CAUSE(S)	CORRECTIVE ACTION
LEDs do not illuminate.	Battery is discharged.	Place unit in docking station to recharge battery.
Intermittent response during RF transmission.	Battery charge is low.	Place unit in docking station to recharge battery.
	RF gateway is near large metal structure.	Verify that large amount of metal is not blocking transmission.
No response from Cresnet system.	Net ID of gateway is incorrectly set.	Verify that the Net ID for the gateway and the Net ID set in the SIMPL program match.
	RF ID is incorrectly set.	Verify that the RF ID for the gateway and the RF ID set in the SIMPL program match.
	Program does not match hardware.	Verify correct program is loaded in system.
	Gateway is unplugged (no power).	Verify power to the gateway.
	Wrong WPR-48 in use.	If multiple transmitters are accessible, verify proper unit is used.
	WPR-48 not properly configured.	Run Viewport and verify WPR-48 attributes.

Further Inquiries

If, after reviewing this Operations Guide, you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team in your area. Dial one of the following numbers.

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876].

- In Europe, call Crestron International at +32-15-50-99-50.

- In Asia, call Crestron Asia at +852-2341-2016.

- In Latin America, call Crestron Latin America at +5255-5093-2160.

- In Australia and New Zealand, call Crestron Control Solutions at +61-2-9737-8203.

You can also log onto the online help section of the Crestron website (www.crestron.com) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the WPR-48, additional information and programming examples may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website (www.crestron.com) periodically for manual update availability and its relevance. Updates are available from the Downloads | Product Manuals section and are identified as an "Addendum" in the Download column.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange, or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number, and return address.

2. Products may be returned for credit, exchange, or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J., or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.

3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended, or if it has been subjected to misuse, accidental damage, modification, or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced, or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supercedes all previous warranties.

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